Design and implementation of a trusted third-party based cross-realm AAA system

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With the increasing popularity of the new generation Internet, referred to as IPv6, any electronic device with enough ressources to support an IP networking stack would be connected to the Internet. Inter-realm greements and contracts would allow devices to access ressources offered in foreign realms. In this new era of interconnectivity, authentication and authorization are vital actors in the scene. Cross-realm support in the AAA frameworks allows clients to obtain credentials for accessing services deployed by foreign realms. In this paper, we survey the standard cross-realm AAA frameworks. We focus on the Kerberos protocol and we discuss its advantages and shotcomings. We show that, altough several improvements were suggested, the cross-realm operations in Kerberos still can be enhanced for better performance and more convenience. Our proposal, the XKDCP protocol, defines a new model for cross-realm operations in Kerberos. It specifies message exchanges between Kerberos KDCs (Key Distribution Centers) that take place when cross-realm operations are involved. Our approach have the advantage of making cross-realm operations completely transparent to the client. The clients follow the same behavious independently from their location (roaming ot not) or the service location (local or remote realm). Furthermore, our proposal makes the client side processing simpler, allowing devices with very modest computing capabilities to profit from the services managed by our proposed AAA framework solution.